

WHAT IS CLAIMED IS:

1. A data mining system for tracking user behavior in a three-dimensional multi-user environment, comprising:

an Ihost server, wherein said Ihost server is adapted to simulate the three-dimensional multi-user environment and objects therein; and

a plurality of clients connected to said Ihost server via a network, wherein each of said clients is adapted to allow a user to alter the location of said objects in the three-dimensional multi-user environment;

wherein said Ihost server is further adapted to maintain a data mining pylon in the three-dimensional multi-user environment, and wherein said data mining pylon is adapted to generate a data mining fact concerning the location of said objects in the three-dimensional multi-user environment.

2. The data mining system of claim 1, wherein said data mining pylon is further adapted to generate a list of objects within said data mining pylon at a predetermined point in time, and wherein said data mining fact generated by said data mining pylon includes said list of objects.

3. The data mining system of claim 2, wherein said data mining fact generated by said data mining pylon further includes state information for each of said objects included on said list of objects.

4. The data mining system of claim 1, wherein said data mining pylon is further adapted to generate a first list of objects within said data mining pylon at a first point in time, to generate a second list of objects within said data mining pylon at a second point in time, to compare said first list of objects to said second list of objects, wherein said objects appearing in said second list but not in said first list comprise objects that have entered said data mining pylon and said objects appearing in said first list but not in said second list comprise objects that have

exited said data mining pylon, and wherein said data mining fact generated by said data mining pylon includes a list of said objects that have entered said data mining pylon and said objects that have exited said data mining pylon.

5. The data mining system of claim 1, wherein said data mining pylon is further adapted to identify an object that enters or exits said data mining pylon, and wherein said data mining fact generated by said data mining pylon includes an identification of said object that has entered or exited said data mining pylon.

6. The data mining system of claim 1, wherein said data mining pylon is invisible.

7. The data mining system of claim 1, wherein said data mining pylon contains a second data mining pylon, and wherein second data mining pylon is also adapted to generate a data mining fact concerning the location of said objects in the three-dimensional multi-user environment.

8. The data mining system of claim 1, wherein said data mining pylon is attached to an object in the three-dimensional multi-user environment, and wherein said object is a moving object.

9. The data mining system of claim 1, further comprising:  
an AvMan server connected to said Ihost server, wherein said AvMan server comprises a data warehousing file;  
wherein said Ihost server is further adapted to provide said data mining fact to said AvMan server and wherein said AvMan server is adapted to receive said data mining fact and to store said data mining fact in said data warehousing file.

10. The data mining system of claim 9, wherein said AvMan server is further adapted to generate a second data mining fact and to store said second data mining fact in said data warehousing file, and wherein said second data mining fact includes at least one of the following types of information:

user login information;  
user registration information;  
commerce information;  
communication information;  
world state information;  
object state information;  
user relationship information;  
survey information;  
advertising information;  
customer-submitted content information;  
Web activity information; or  
user interface events information.

11. The data mining system of claim 1, wherein one of said plurality of clients further comprises:

an editor;

wherein said editor is adapted to allow a user to create a data mining pylon and change the state of said data mining pylon in the three-dimensional multi-user environment.

12. The data mining system of claim 11, wherein said editor is adapted to allow a user to change the state of said data mining pylon from visible to invisible and from invisible to visible.

13. The data mining system of claim 1, wherein said data mining pylon comprises a box, sphere, cylinder, or cone.

14. The data mining system of claim 1, wherein said objects comprise avatars.

15. The data mining system of claim 1, wherein said network comprises the Internet.

16. A data mining system for tracking user behavior in a three-dimensional multi-user environment, comprising:

an lhost server adapted to simulate the three-dimensional multi-user environment and objects therein, wherein at least one of said objects comprises an object with usage trigger;

a plurality of clients connected to said lhost server via a network, wherein each of said clients is adapted to allow a user to cause said objects to interact in the three-dimensional multi-user environment;

wherein said object with usage trigger is adapted to detect when a second object interacts with said object with usage trigger and to generate a data mining fact in response to said interaction.

17. The data mining system of claim 16, wherein said second object comprises an avatar.

18. The data mining system of claim 16, wherein said data mining fact comprises the identity of said object with usage trigger and said second object.

19. The data mining system of claim 16, wherein said data mining fact further comprises the type of interaction that has occurred, the time that said interaction occurred, and the location in the three-dimensional multi-user environment at which said interaction occurred.

20. The data mining system of claim 16, further comprising:  
an AvMan server connected to said Ihost server, wherein said AvMan server comprises a data warehousing file;

wherein said Ihost server is further adapted to provide said data mining fact to said AvMan server and wherein said AvMan server is adapted to receive said data mining fact and to store said data mining fact in said data warehousing file.

21. The data mining system of claim 20, wherein said AvMan server is further adapted to generate a second data mining fact and to store said second data mining fact in said data warehousing file, and wherein said second data mining fact includes at least one of the following types of information:

user login information;  
user registration information;  
commerce information;  
communication information;  
world state information;  
object state information;  
user relationship information;  
survey information;  
advertising information;  
customer-submitted content information;  
Web activity information; or  
user interface events information.

22. A method for data mining in a three-dimensional multi-user environment comprising:

simulating the three-dimensional multi-user environment and objects therein;

altering the location of said objects in the three-dimensional multi-user environment;

maintaining a data mining pylon in the three-dimensional multi-user environment; and

generating a data mining fact from said data mining pylon concerning the location of objects in the three-dimensional multi-user environment.

23. The method of claim 22, wherein generating a data mining fact comprises:

generating a list of objects within said data mining pylon at a predetermined point in time; and

generating a data mining fact comprising said list of objects.

24. The method of claim 22, wherein generating a data mining fact comprises:

generating a list of objects within said data mining pylon at a predetermined point in time; and

generating a data mining fact comprising said list of objects and state information for each of said objects included on said list of objects.

25. The method of claim 22, wherein generating a data mining fact comprises:

generating a first list of objects within said data mining pylon at a first point in time;

generating a second list of objects within said data mining pylon at a second point in time;

comparing said first list of objects to said second list of objects, wherein said objects appearing in said second list but not in said first list comprise objects that have entered said data mining pylon and said objects appearing in said

first list but not in said second list comprise objects that have exited said data mining pylon; and

generating a data mining fact comprising a list of said objects that have entered said data mining pylon and said objects that have exited said data mining pylon.

26. The method of claim 22, wherein generating a data mining fact comprises:

identifying an object that enters or exits said data mining pylon; and  
generating a data mining fact including an identification of said object that entered or exited said data mining pylon.

27. The method of claim 22, wherein maintaining a data mining pylon in the three-dimensional multi-user environment comprises maintaining said data mining pylon as an invisible object.

28. The method of claim 22, further comprising:  
maintaining a second data mining pylon within said data mining pylon; and  
generating a second data mining fact from said second data mining pylon concerning the location of objects in the three-dimensional multi-user environment.

29. The method of claim 22, further comprising:  
attaching said data mining pylon to an object in the three-dimensional multi-user environment, wherein said object is a moving object.

30. The method of claim 22, further comprising:  
storing said data mining fact in a data warehousing file.

31. The method of claim 30, further comprising:  
generating a second data mining fact and storing said second data mining fact in said data warehousing file, wherein said data mining fact includes at least one of the following types of information:

user login information;  
user registration information;  
commerce information;  
communication information;  
world state information;  
object state information;  
user relationship information;  
survey information;  
advertising information;  
customer-submitted content information;  
Web activity information; or  
user interface events information.

32. The method of claim 22, further comprising:  
creating said data mining pylon in the three-dimensional multi-user environment.

33. The method of claim 32, further comprising:  
changing the state of said data mining pylon from visible to invisible or from invisible to visible.

34. The method of claim 22, wherein said data mining pylon comprises a box, sphere, cylinder or cone.

35. The method of claim 22, wherein said objects comprise avatars.



36. The method of claim 22, wherein said network comprises the Internet.

37. A method for data mining in a three-dimensional multi-user environment comprising:

simulating the three-dimensional multi-user environment and objects therein, wherein at least one of said objects comprises an object with usage trigger;

causing said objects to interact in the three-dimensional multi-user environment;

detecting when a second object interacts with said object with usage trigger; and

generating a data mining fact in response to detecting said interaction.

38. The method of claim 37, wherein said second object comprises an avatar, and detecting when a second object interacts with said object with usage trigger comprises detecting when said avatar interacts with said object with usage trigger.

39. The method of claim 37, wherein generating a data mining fact comprises generating a data mining fact comprising the identity of said object with usage trigger and said second object.

40. The method of claim 37, wherein generating a data mining fact comprises generating a data mining fact comprising the identity of said object with usage trigger and said second object, the type of interaction that has occurred, the time that said interaction occurred, and the location in the three-dimensional multi-user environment at which said interaction occurred.

41. The method of claim 37, further comprising:  
storing said data mining fact in said data warehousing file.

42. The method of claim 41, further comprising generating a second data mining fact and storing said second data mining fact in said data warehousing file, wherein said second data mining fact includes at least one of the following types of information:

user login information;  
user registration information;  
commerce information;  
communication information;  
world state information;  
object state information;  
user relationship information;  
survey information;  
advertising information;  
customer-submitted content information;  
Web activity information; or  
user interface events information.

43. A computer program product comprising a computer useable medium having computer program logic recorded thereon for enabling a processor in a computer system to perform data mining in a three-dimensional multi-user environment, said computer program logic comprising:

means for enabling the processor to simulate the three-dimensional multi-user environment and objects therein;

means for enabling the processor to alter the location of said objects in the three-dimensional multi-user environment;

means for enabling the processor to maintain a data mining pylon in the three-dimensional multi-user environment; and

means for enabling the processor to generate a data mining fact from said data mining pylon concerning the location of objects in the three-dimensional multi-user environment.

44. A computer program product comprising a computer useable medium having computer program logic recorded thereon for enabling a processor in a computer system to perform data mining in a three-dimensional multi-user environment, said computer program logic comprising:

means for enabling the processor to simulate the three-dimensional multi-user environment and objects therein, wherein at least one of said objects comprises an object with usage trigger;

means for enabling the processor to cause said objects to interact in the three-dimensional multi-user environment;

means for enabling the processor to detect when a second object interacts with said object with usage trigger; and

means for enabling the processor to generate a data mining fact in response to detecting said interaction.